

CLAIMS

1. A device comprising:

a PN-junction semiconductor component having a coefficient of thermal expansion (CTE) and having a P side and an N side; and

a contact structure affixed by affixing means to a surface of the PN-junction semiconductor component on either the P side or the N side, wherein the contact structure comprises:

a first subcomponent comprised of a layer of a first material having a first CTE; and

a second subcomponent comprised of a layer of a second material having a second CTE plated on opposing surfaces of the first subcomponent, wherein the first and second subcomponents have an overall thickness such that the contact structure has an effective CTE that matches the CTE of the semiconductor component more closely than either the second CTE or the first CTE; and wherein the layers of the second material are of substantially equal thickness to balance thermal stresses between the first subcomponent and the second subcomponent.

2. A device according to claim 1 that comprises:

a plurality of semiconductor components affixed to a common substrate; and

a plurality of contact structures, wherein a respective contact structure is affixed to the surface of a respective semiconductor component .

3. A device according to claim 1 wherein the second material is copper, the first material is molybdenum, and the affixing means is a hard solder.

4. A device according to claim 3 wherein the second subcomponent has a thickness on each opposing surface that is within a range from about one-twentieth to about one-fifth of the contact structure thickness.

5. A device according to claim 3 wherein the hard solder is a gold-tin solder.

6. A device according to claim 1 wherein the second material is silver, the first material is molybdenum, and the affixing means is a hard solder.
7. A device according to claim 6 wherein the hard solder is a gold-tin solder.
8. A device according to claim 1 wherein the contact structure is affixed to the N-side.